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ABSTRACT

This report describes the history of St. Ignatius, a small school district in western Montana, and reveals how it defied conventional wisdom that school construction was a stress-filled and expensive experience by building and then expanding their middle school under budget and with greater control. Use of a project manager who would serve as a district employee along with a district team made up of the superintendent, maintenance staff, and trustees to control each phase of the project is described. (GR)

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Building Middle Schools On A Budget

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There is a bit of conventional wisdom among school superintendents that indicates that there is no more perilous career course than to involve a district in a building project. For most districts, facility construction is a stressful, expensive, and anxiety ridden experience. Yet a small district in western Montana has managed to not only defy the odds when it came to building and then expanding their middle school, but to do so in an innovative manner worthy of note and emulation.

St. Ignatius, Montana has a long and colorful history of educational development. The town is located at the foot of the Mission Mountains on the erroneously named Flathead Indian Reservation. The reservation is actually home to the Salish and Kootenai Indian tribes. During their famous expedition of discovery in 1805, Captains Lewis and Clark referred to the Salish Indians as Flatheads; a generic term that they used to refer to all Northwest Indians (Ambrose, p.289). The mistake was never corrected, and to this day the Salish and Kootenai live on a reservation named for another tribe.

St. Ignatius is the oldest community on the Flathead Reservation and actually predates its establishment. In 1854 Father Adrian Hoecken, a

Jesuit, relocated his mission from eastern Washington to a location at the foot of the Mission Mountains that had been long used as a popular gathering place for area tribes. He and his fellow missionaries build a log cabin and erected a small chapel. Within a short period of time over 1,000 Indians had taken up residency in the immediate area (Spritzer, p.168).

In 1864 four nuns from Montreal arrived in St. Ignatius and established a small hospital. These Sisters of Providence also opened a girl's boarding school where they taught cooking, sewing, gardening, laundry, and dairy work, in addition to the standard school curriculum of the day. In 1875 Jesuit priests brought a printing press to St. Ignatius and taught the Indian boys to set type and print Bible stories in their native Salish language. Some time later Ursuline nuns came to the community and started a kindergarten to serve the needs of the areas' homeless orphans. As early as 1890 the schools in St. Ignatius were serving 320 Native American students (Spritzer, p.168).

It was at this point that disaster struck the educational community of St. Ignatius. A resistant, young scholar who "believed there would be no class if there were no school" set the school on fire and destroyed both the school and the dormitory. Education in St. Ignatius survived both the fire and this student's attitude only to rebuild, grow, and develop during

the 20th century (Spritzer, p.168).

Today St. Ignatius is a town of 780, predominantly lower middle class residents. The largest employers in the area are the Salish and Kootenai Tribe and the Jore Corporation, a manufacturer of light tools. The K-12 school district has a population of 597 students that are 51% Native-American, 49% Caucasian, and 1% Hispanic. Sixty-seven percent of the students qualify for free and reduced lunches. The town of St. Ignatius has experienced slow but steady growth during the 20th century necessitating an ongoing cycle of school facility building and renovation.

The oldest section of the current elementary building in St. Ignatius was erected in 1927 and for eight years housed the district's K-12 studentbody. Continued growth prompted the 1935 expansion of that facility, featuring the addition of a gymnasium and more classrooms. Further population increases encouraged the district to build again in 1956, adding a separate structure to house the then small high school population. This high school building was again expanded in 1973 with the addition of another gymnasium and more classrooms.

Both the original high school structure and the 1973 expansion were built before the first Arab oil crisis. They were constructed of cinderblock walls and frame roofs. Designed during an era of cheap

energy, the roofing material was corrugated steel. Below the steel roof was a composite, fiberboard, suspended ceiling. The insulating properties of the structures could be accurately described as R-Zero. There was no insulation material of any kind used in the construction of either building. Considering that the building's source of heat was #1 fuel oil and that prior to the 1970's, fuel oil was quite inexpensive, the volume of oil used to heat the building was not noteworthy. Subsequent to the oil crisis, this was not the case.

In the late 1970's, as oil prices kept pace with inflation, energy costs and potential conservation measures, such as insulation, warranted new interest. The high school building was retro-fitted with fiberglass insulation and heating costs dropped to an acceptable level. A positive byproduct of this retro-fitting process was a newly developed awareness of energy conservation that would serve the district well when it came time to expand or replace other buildings.

As the St. Ignatius district steadily grew during the 1980's the need for additional facilities became apparent. A major expansion and renovation of the elementary building was undertaken in 1985 and two more large classrooms were added in 1993. Both additions were modern, energy-efficient structures.

Early in the 1990's a group of teachers and administrators from St. Ignatius, who were involved in graduate studies at The University of Montana's School of Education, became interested in the middle school concept. Together, they began to discuss the possibility of establishing a middle school to replace the district's traditional K-8 model.

The timing seemed perfect. The St. Ignatius elementary school and high school buildings were once again reaching capacity and the need for additional facilities was apparent. In 1994 the decision was made to restructure the curriculum of the district and to provide relief from the overcrowding with the addition of a new middle school. The district faced two major changes. In addition to a new facility, the district would also develop a new curricular model for intermediate level education.

Consultants from The University of Montana, School of Education were brought in to advise the district in the areas of middle school curriculum development and middle school facilities planning. After a period of study and evaluation it was determined that the St. Ignatius District would build a 10,000 square foot middle school building to house four large classrooms, a laboratory and a commons/locker area. The walls between all adjoining classrooms would have opening panels that would maximize the facility's flexibility and better accommodate middle school curricular

activities.

To this point the school facility process in St. Ignatius seemed quite routine. The need for more room was established. Advise in the areas of curriculum and facility options was sought and followed. A building plan was formulated and an architect was hired to complete blueprints and engineering specifications. Bids for construction costs were solicited from area contractors. The next step is what made the St. Ignatius project unique.

After reviewing the bids from four contractors, it was determined that the cost of the proposed building would vary between $80 and $100 dollars per square foot depending upon the contractor selected. Faced with potential building costs ranging from $800,000 to one million dollars, the district decided to act as its own general contractor and hire a project manager knowledgeable in all areas of building construction, who would serve as a district employee. Using this approach, it was estimated that the district could erect the addition for approximately $55 per foot, thus saving between $250,000 and $450,000 dollars. They were correct. With blueprints and specifications in hand, the district team made up of the superintendent, maintenance staff, trustees, and project manager went to work hiring sub-contractors for the various phases of the project.

St. Ignatius Middle School was to be constructed of a new and very energy efficient material. The building would sit on an insulated cement slab which would support a post and beam framing structure. The framework consists of twelve foot tall vertical posts set at eight foot intervals. On top of the posts rest beams that support the truss-framed roof structure. Between each of the vertical posts, preformed wall sections are installed. Each of these wall sections is constructed of eight-inch-thick styrofoam covered with a 3/8 inch sheet of wafer-board on each side. The wall sections came from the manufacturer in four by twelve foot sections. Each panel has tongue and groove edges that form a solid seal when placed together. Two pre-formed wall sections are required to fill the spaces between each set of vertical posts.

The walls have pre-cut channels for electrical wiring. Once in place the walls are sheeted with two layers of sheetrock on the inside and a stucco finish on the exterior surfaces. The roofing material is polypropylene laid over sheets of exterior-grade plywood which is secured to the roof-truss support framing. As expected, the insulating qualities of the new building materials are very impressive. The manufacturers rate the insulating qualities at R-24 for the walls and R-44 for the roof. The proof of the energy efficiency of this structure came in the first

winter of operation, during which the building's heating system was inadvertently left off. During what proved to be a typical western Montana winter, the middle school addition remained at a constant 68 degrees without any source of heat other than the presence of the students and their teachers.

While much of the construction was accomplished by district personnel, certain phases required the expertise of certified contractors to insure that all building code requirements were met. The cement slab, with post footings and encased plumbing were the responsibility of a cement and plumbing contractor hired for that purpose. A different contractor was hired to erect the post and beam framing structure and work with the district's maintenance crew in the hanging of the wall panels and the setting of the roof trusses. An independent electrical contractor was hired to wire the building and assure its compliance to local codes. Another contractor was selected to do the interior sheetrocking and exterior plaster work. A heating and airconditioning firm connected the new building's heating ducts to an existing central furnace.

While the process of acting as the general contractor was generally very positive it did have its aggravations and anxious moments. The heating contractor and his crew managed to drop a significant amount of

solder on the cement floor while installing the venting systems above the building's suspended ceilings. Though obvious to all present, the solder on the floor did not appear to be problematic until after the flooring contractor installed the linoleum floor covering. At that point it was discovered that the adhesive used to fasten the linoleum would not stick to the cement floor where it had been in contact with solder. The linoleum was installed and immediately began to peel up. Initially neither the heating contractor nor the flooring people were willing to accept responsibility for the obvious problem. After several intense discussions the district and the contractors arrived at a compromise. The linoleum was replaced with a heavy grade of carpet which successfully remained in place.

After twelve months of construction the middle school building was complete and opened for students in the Fall of 1994. The final cost of construction was $560,000 or $56 per square foot. With the major building project completed the district took time to evaluate their experience and contemplate the possibility of acting as their own general contractor during future school facility expansion projects. Several interesting conclusions were reached.

The superintendent and trustees agreed that despite the pressure and

aggravation of overseeing the construction, the effort was well worth it and they would strongly recommend this course of action to other districts. They caution that the hiring of a good architect is essential since so much of the process is dependent on the accuracy of the design and plans for the structure. The three greatest advantages that the district identifies for serving as its own contractor are cost, control, and change orders.

The cost factor is obvious. Any time one can save between $240,000 and $440,000 dollars on a project it is worthy of consideration. The second factor is control of the project. When relying on a general contractor, situations occur in which your building project is one of many on-going activities that require the contractor's attention. Due to scheduling conflicts or even inattentiveness, lapse-time may occur in which little or nothing is done to your school building. Serving as your own general and hiring a project manager, eliminates this factor. The project manager is responsible for coordinating and scheduling the construction activities. Unlike a general contractor, the project manager is solely a school district employee. The third issue is change orders.

It is common for construction companies to charge a triple rate for change orders that occur during a building process. For example, if during

construction the client decides that a door or window should be placed in a different location, the contractor charges them once for the original installation, a second charge for removing the recently installed door or window, and a third time for re-installing the unit in the new location. From the contractors perspective this is understandable since time and energy is being expended and should be compensated. The difficulty lies in the fact that almost every construction project requires some modification of the original plans during construction and this can become quite costly. The only alternative to avoid these charges is for the school to live with the identified design flaw rather than incurring change-order costs. Serving as its own general contractor gives a district greater freedom to make needed adjustments to the original facility plans.

The ultimate test of this type of innovative approach to facility construction is the willingness of the participants to follow the same course of action again. Would the St. Ignatius School District act as its own general contractor in subsequent building projects? The answer is yes. In 1998 the district added 2,450 square feet to the middle school structure at a cost of $38.00 per square foot. Again in 1999 they added a 2,240 square foot library and computer lab at a cost of $33.00 per foot. The lower costs of the last two additions reflect the lack of additional

plumbing requirements in the additions.

Setting conventional wisdom aside, the administrators and trustees of St. Ignatius, Montana have turned the peril of facility construction into an economic windfall for their district. Among the district personnel there is a slogan that states "there is no problem that we can not resolve." While many districts have catchy sayings that only sound good, St. Ignatius has operationalized theirs in a manner that other districts would do well to study and emulate.

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